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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/025,904	12/26/2001	Yong Ik Bang	8733.525.00	7612

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EXAMINER	
RUDE, TIMOTHY L	

ART UNIT	PAPER NUMBER
2883	

DATE MAILED: 07/27/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/025,904	BANG ET AL.	
	Examiner	Art Unit	
	Timothy L Rude	2883	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *16 April 2004*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-20* is/are pending in the application.

4a) Of the above claim(s) *5 and 13-16* is/are withdrawn from consideration.

5)☒ Claim(s) *7-10 and 17-20* is/are allowed.

6)☒ Claim(s) *1,4,6,11 and 12* is/are rejected.

7)☒ Claim(s) *2 and 3* is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Claims

1. Claim 1 is amended.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

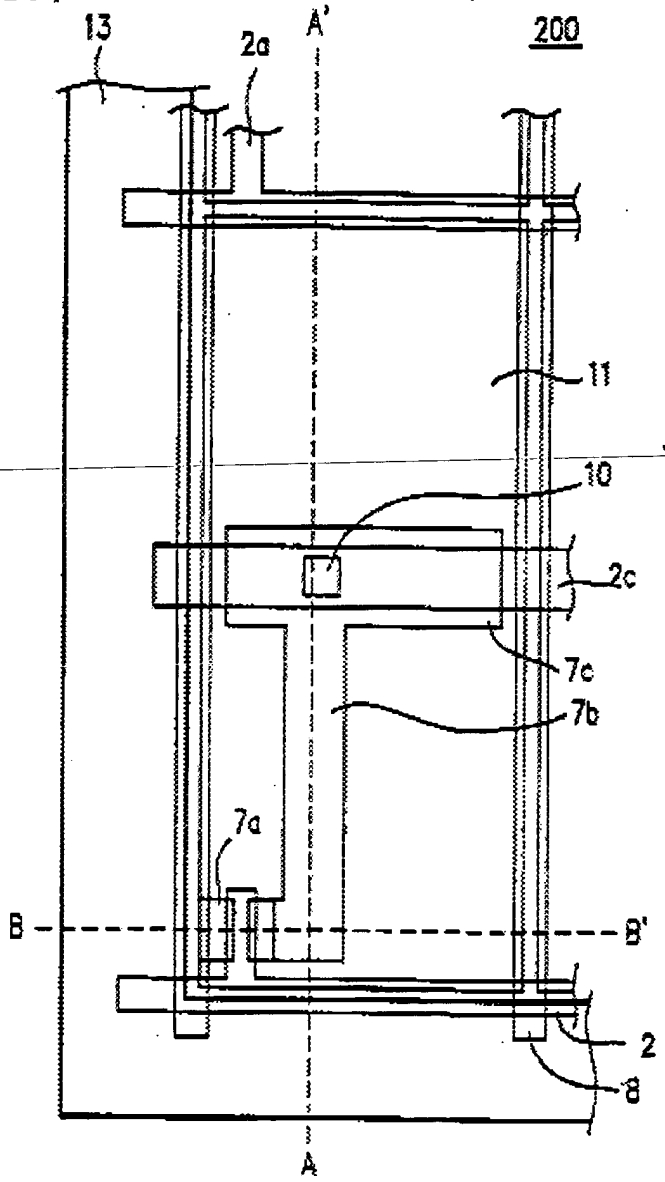
2. Claim 1 is rejected under 35 U.S.C. 102(b) as being anticipated by Shimada et al (Shimada) USPAT 5,877,830.

As to claim 1, Shimada discloses (Title, Abstract, entire patent) a liquid crystal display (LCD) panel comprising:

a first substrate provided with a plurality of gate, 2, and data, 8, lines, the gate lines being arranged to cross the data lines to define a plurality of pixel regions in a matrix arrangement; a second substrate provided with a black matrix layer (col. 5, lines 50-60) to shield portions other than the pixel regions from light; and liquid crystal layer injected between the first and second substrates, wherein the pixel regions in a peripheral portion of the matrix arrangement have an aperture ratio lower than that of the pixel

regions in other portions of the matrix arrangement (col. 2, lines 29-42 and col. 6, lines 35-45) in the example where the black matrix overlaps the pixel electrodes, 11.

FIG. 1

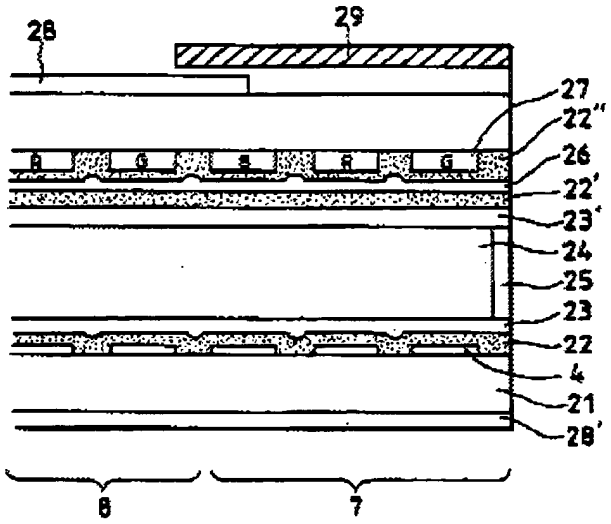


3. Claim 1 is rejected under 35 U.S.C. 102(b) as being anticipated by Sono et al (Sono) USPAT 5,513,028.

As to claim 1, Sono discloses (Title, Abstract, entire patent) a liquid crystal display (LCD) panel comprising:

a first substrate provided with a plurality of gate and data lines, the gate lines being arranged to cross the data lines to define a plurality of pixel regions in a matrix arrangement; a second substrate provided with a shield plate, 29 (Applicant's black matrix layer), to shield portions other than the pixel regions from light; and liquid crystal layer injected between the first and second substrates, wherein the pixel regions in a peripheral portion of the matrix arrangement have an aperture ratio lower than that of the pixel regions in other portions of the matrix arrangement due to shielding.

FIG. 5



Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

4. Claims 4, 6, 11, and 12 are rejected under 35 U.S.C. 103(a) as being unpatentable over Sono.

As to claim 4, Sono discloses the liquid crystal display panel of claim 1.

Sono does note explicitly disclose a panel wherein the black matrix layer corresponding to at least one of a first gate line, a first data line and a last data line has a greater width than widths of the black matrix layer corresponding to the other portions

so as to allow the pixel regions in the peripheral portion to obtain an aperture ratio lower than that of the pixel regions the other portions.

Please note: in considering the disclosure of a reference, it is proper to take into account not only specific teachings of the reference but also the inferences which one skilled in the art would reasonably be expected to draw therefrom (MPEP 2144.01).

Sono teaches the periphery may be shaded by dummy areas, a circuit element, a wiring, or by the combination thereof (col. 7, lines 38-50) as suitable for setting the aperture of the peripheral pixels. Sono is considered ample teaching to suggest the setting of a black matrix width for purposes of adequate overlap to achieve desired shielding in the region of the first gate line, first data line, and/or a last data line.

Sono is evidence that ordinary workers in the art of liquid crystals would find the reason, suggestion, or motivation to optimize the results effective variable wherein a black matrix layer corresponding to at least one of a first gate line, first data line or a last data line among the data lines has a greater width than widths of the black matrix layer corresponding to the other portions so as to allow the pixel regions in the peripheral portion to obtain an aperture ratio lower than that of the pixel regions the other portions.

Therefore, it would have been obvious to one having ordinary skill in the art of liquid crystals at the time the invention was made to modify the LCD of Sono by optimizing the results effective variable wherein a black matrix layer corresponding to at least one of a first gate line, first data line or a last data line among the data lines has a greater width than widths of the black matrix layer corresponding to the other portions so as to allow the pixel regions in the peripheral portion to obtain an aperture ratio lower

than that of the pixel regions the other portions to achieve desired shielding and aperture ratio in the periphery (MPEP 2144.07).

As to claim 6, Sono discloses the liquid crystal display panel of claim 1.

Sono does not explicitly disclose a panel wherein an aperture ratio of the pixel regions in the peripheral portion is about 10-15% lower than aperture ratios of the pixel regions at the other portions.

Sono discloses restriction of the aperture of the peripheral portion as a results effective variable to avoid light leakage.

Sono is evidence that ordinary workers in the art of liquid crystals would find the reason, suggestion, or motivation to optimize the results effective variable to an aperture ratio of the pixel regions in the peripheral portion is about 10-15% lower than aperture ratios of the pixel regions at the other portions to avoid unwanted light leakage.

Therefore, it would have been obvious to one having ordinary skill in the art of liquid crystals at the time the invention was made to modify the LCD of Sono with an aperture ratio of the pixel regions in the peripheral portion is about 10-15% lower than aperture ratios of the pixel regions at the other portions to avoid unwanted light leakage (MPEP 2144.05 II B).

As to claims 11 and 12, Sono discloses an liquid crystal display panel, comprising:

a first substrate provided with a plurality of gate and data lines, the gate lines being arranged to cross the data lines to define a plurality of pixel regions in a matrix arrangement; a second substrate provided with a black matrix layer to shield portions other than the pixel regions from light; and a liquid crystal display layer injected between the first and second substrates above.

Sono does note explicitly disclose a panel wherein the black matrix layer corresponding to at least one of a first gate line, first data line and a last data line among the data lines has a greater width than portions of the black matrix layer corresponding to other gate or data lines respectively.

Please note: in considering the disclosure of a reference, it is proper to take into account not only specific teachings of the reference but also the inferences which one skilled in the art would reasonably be expected to draw therefrom (MPEP 2144.01).

Sono teaches the periphery may be shaded by dummy areas, a circuit element, a wiring, or by the combination thereof (col. 7, lines 38-50) as suitable for setting the aperture of the peripheral pixels. Sono is considered ample teaching to suggest the setting of a black matrix width for purposes of adequate overlap to achieve desired shielding.

Sono is evidence that ordinary workers in the art of liquid crystals would find the reason, suggestion, or motivation to optimize the results effective variable wherein a black matrix layer corresponding to at least one of a first data line and a last data line

among the data lines has a greater width than portions of the black matrix layer corresponding to other gate or data lines so as to allow the pixel regions in the peripheral portion to obtain an aperture ratio lower than that of the pixel regions the other portions.

Therefore, it would have been obvious to one having ordinary skill in the art of liquid crystals at the time the invention was made to modify the LCD of Sono by optimizing the results effective variable wherein a black matrix layer corresponding to at least one of a first data line and a last data line among the data lines has a greater width than portions of the black matrix layer corresponding to other gate or data lines so as to allow the pixel regions in the peripheral portion to obtain an aperture ratio lower than that of the pixel regions the other portions to achieve desired shielding and aperture ratio in the periphery (MPEP 2144.07).

Allowable Subject Matter

Claims 2 and 3 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

The following is a statement of reasons for the indication of allowable subject matter:

Claim 2 is allowable over the prior art of record because the latter, either alone or in combination, does not disclose nor render obvious a liquid crystal display panel as

claimed comprising: *a panel wherein a first gate line among the gate lines has a greater width than widths of the other gate lines so as to allow the pixel regions in the peripheral portion to obtain an aperture ratio lower than that of the pixel regions in the other portions.*

The closest reference is Shimada, wherein the pixel regions in a peripheral portion of the matrix arrangement have an aperture ratio lower than that of the pixel regions in other portions of the matrix arrangement in the example where the black matrix overlaps the pixel electrodes. However, Shimada does not render obvious a panel wherein a first gate line among the gate lines has a greater width than widths of the other gate lines so as to allow the pixel regions in the peripheral portion to obtain an aperture ratio lower than that of the pixel regions in the other portions.

Claim 3 is allowable over the prior art of record because the latter, either alone or in combination, does not disclose nor render obvious a liquid crystal display panel as claimed comprising: *a panel wherein a first data line or a last data line among the data lines has a greater width than widths of the other data lines so as to allow the pixel regions in the peripheral portion to obtain an aperture ratio lower than that of the pixel regions in the other portions.*

The closest reference is Shimada, wherein the pixel regions in a peripheral portion of the matrix arrangement have an aperture ratio lower than that of the pixel regions in other portions of the matrix arrangement in the example where the black matrix overlaps the pixel electrodes. However, Shimada does not render obvious a

panel wherein a first data line or a last data line among the data lines has a greater width than widths of the other data lines so as to allow the pixel regions in the peripheral portion to obtain an aperture ratio lower than that of the pixel regions in the other portions.

Claims 7-10 and 17-20 are allowed.

The following is a statement of reasons for the indication of allowable subject matter:

Claim 7 is allowable over the prior art of record because the latter, either alone or in combination, does not disclose nor render obvious a liquid crystal display panel as claimed comprising: *a panel wherein the pixel electrodes at a peripheral portion of the matrix arrangement are narrower than the pixel electrodes at other portions of the matrix arrangement.*

The closest reference is Shimada, wherein the pixel regions in a peripheral portion of the matrix arrangement have an aperture ratio lower than that of the pixel regions in other portions of the matrix arrangement in the example where the black matrix overlaps the pixel electrodes. However, Shimada does not render obvious a panel wherein the pixel electrodes at a peripheral portion of the matrix arrangement are narrower than the pixel electrodes at other portions of the matrix arrangement.

Claim 17 is allowable over the prior art of record because the latter, either alone or in combination, does not disclose nor render obvious a liquid crystal display panel as claimed comprising: *a width of a first gate line among the gate lines is greater than widths of other gate lines, width of one of a first data line and a last data line among the data lines is greater than widths of other data lines, and width of portions the black matrix pattern corresponding to one of the first gate line, the first data line and the last data line is greater than widths of portions of the black matrix pattern not corresponding to the one of the first gate line, the first data line, and the last data line.*

The closest reference is Shimada, wherein the pixel regions in a peripheral portion of the matrix arrangement have an aperture ratio lower than that of the pixel regions in other portions of the matrix arrangement in the example where the black matrix overlaps the pixel electrodes. However, Shimada does not render obvious a width of a first gate line among the gate lines is greater than widths of other gate lines, width of one of a first data line and a last data line among the data lines is greater than widths of other data lines, and width of portions the black matrix pattern corresponding to one of the first gate line, the first data line and the last data line is greater than widths of portions of the black matrix pattern not corresponding to the one of the first gate line, the first data line, and the last data line.

Claims 8-10 and 18-20 are allowable because the directly or indirectly depend from claims with allowable subject matter above.

Response to Arguments

Applicant's arguments filed on 16 April 2004 have been fully considered but some of the arguments are not persuasive.

Applicant's ONLY non-persuasive arguments are as follows:

(1) None of the applied references teach a matrix arrangement wherein pixel regions in a peripheral portion of the matrix have an aperture ratio lower than that of the pixel regions in other portions.

(2) None of the applied references teach a matrix arrangement wherein pixel electrodes in a peripheral portion of the matrix have an aperture ratio lower than that of the pixel regions in other portions.

Examiner's responses to Applicant's ONLY arguments are as follows:

(1) It is respectfully pointed out that the aperture ratio is a function of the assembled display device, i.e., the cumulative effect of the assembled structure. It is contrary to the terminology of the art (and common dictionaries) to consider a portion of a pixel electrode that is shadowed by a black matrix to contribute to aperture ratio of a pixel region. In other words, the aperture ratio of a pixel region (and/or pixel electrode) is reduced by anything that blocks the path of the light, regardless of which substrate the light blocking structure may be. Examiner considers the rejections proper in view of the commonly held definitions of the terms used in the claims as presently broadly written.

(2) It is respectfully pointed out that the aperture ratio is a function of the assembled display device, i.e., the cumulative effect of the assembled structure. It is contrary to the terminology of the art (and common dictionaries) to consider a portion of a pixel electrode that is shadowed by a black matrix to contribute to aperture ratio of a pixel electrode. In other words, the aperture ratio of a pixel electrode (and/or pixel region) is reduced by anything that blocks the path of the light, regardless of which substrate the light blocking structure may be. Examiner considers the rejections proper in view of the commonly held definitions of the terms used in the claims as presently broadly written. Please note that amendments to the claims may easily be made to be consistent with the accepted meaning of aperture ratio; however, narrowing of the claims in such a way would likely require further consideration and search.

Conclusion

THIS ACTION IS MADE FINAL. Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of

the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Timothy L Rude whose telephone number is (571) 272-2301. The examiner can normally be reached on Monday through Thursday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Frank Font can be reached on (571) 272-2415. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Timothy L Rude
Examiner
Art Unit 2883

tlr

Frank G. Font
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